**DESCRIPTIONS**
- The Hyper Red source color devices are made with AlGaInP on GaAs substrate Light Emitting Diode.
- Electrostatic discharge and power surge could damage the LEDs.
- It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.
- All devices, equipments and machineries must be electrically grounded.

**FEATURES**
- 3.2 mm x 1.6 mm SMD LED, 1.8 mm thickness
- Low power consumption
- Ideal for backlight and indicator
- Package: 2000pcs / reel
- Moisture sensitivity level : level 3
- RoHS compliant

**APPLICATIONS**
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

**ATTENTION**
Observe precautions for handling electrostatic discharge sensitive devices.

**PACKAGE DIMENSIONS**

**RECOMMENDED SOLDERING PATTERN**

(Units : mm; Tolerance : ± 0.1)

**SELECTION GUIDE**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Emitting Color (Material)</th>
<th>Lens Type</th>
<th>( I_v ) (mcd) @ 2mA [^{[2]}]</th>
<th>Viewing Angle [^{[1]}]</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>APTD3216LSURCK</td>
<td>Hyper Red (AlGaInP)</td>
<td>Water Clear</td>
<td>Min.  60</td>
<td>281/2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Typ.  150</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>*20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>*50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. \( \theta_{1/2} \) is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity / luminous flux: +/-15%.
3. Luminous intensity value is traceable to CIE127-2007 standards.
## ELECTRICAL / OPTICAL CHARACTERISTICS at \( T_A=25^\circ\text{C} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Emitting Color</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength at Peak Emission ( I_F = 2\text{mA} )</td>
<td>( \lambda_{\text{peak}} )</td>
<td>Hyper Red</td>
<td>( - )</td>
<td>645</td>
</tr>
<tr>
<td>Dominant Wavelength ( I_F = 2\text{mA} )</td>
<td>( \lambda_{\text{dom}} )</td>
<td>Hyper Red</td>
<td>( - )</td>
<td>630</td>
</tr>
<tr>
<td>Spectral Bandwidth at 50% ( \Phi \text{ REL MAX} ) ( I_F = 2\text{mA} )</td>
<td>( \Delta \lambda )</td>
<td>Hyper Red</td>
<td>( - )</td>
<td>28</td>
</tr>
<tr>
<td>Capacitance</td>
<td>( C )</td>
<td>Hyper Red</td>
<td>( - )</td>
<td>35</td>
</tr>
<tr>
<td>Forward Voltage ( I_F = 2\text{mA} )</td>
<td>( V_F )</td>
<td>Hyper Red</td>
<td>1.5</td>
<td>1.75</td>
</tr>
<tr>
<td>Reverse Current ( (V_R = 5\text{V}) )</td>
<td>( I_R )</td>
<td>Hyper Red</td>
<td>( - )</td>
<td>-</td>
</tr>
<tr>
<td>Temperature Coefficient of ( \lambda_{\text{peak}} ) ( I_F = 2\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C} )</td>
<td>( T_{C_{\lambda_{\text{peak}}}} )</td>
<td>Hyper Red</td>
<td>( - )</td>
<td>0.14</td>
</tr>
<tr>
<td>Temperature Coefficient of ( \lambda_{\text{dom}} ) ( I_F = 2\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C} )</td>
<td>( T_{C_{\lambda_{\text{dom}}}} )</td>
<td>Hyper Red</td>
<td>( - )</td>
<td>0.05</td>
</tr>
<tr>
<td>Temperature Coefficient of ( V_F ) ( I_F = 2\text{mA}, -10^\circ\text{C} \leq T \leq 85^\circ\text{C} )</td>
<td>( T_{C_{V}} )</td>
<td>Hyper Red</td>
<td>( - )</td>
<td>-1.9</td>
</tr>
</tbody>
</table>

Notes:
1. The dominant wavelength \( (\lambda_d) \) above is the setup value of the sorting machine. (Tolerance \( \lambda_d : \pm 1\text{nm} \).)
2. Forward voltage: \( \pm 0.1\text{V} \).
3. Wavelength value is traceable to CIE127-2007 standards.
4. Excess driving current and/or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

## ABSOLUTE MAXIMUM RATINGS at \( T_A=25^\circ\text{C} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Dissipation</td>
<td>( P_D )</td>
<td>75</td>
<td>mW</td>
</tr>
<tr>
<td>Reverse Voltage</td>
<td>( V_R )</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>( T_I )</td>
<td>115</td>
<td>( ^\circ\text{C} )</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>( T_{\text{op}} )</td>
<td>-40 to +85</td>
<td>( ^\circ\text{C} )</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>( T_{\text{stg}} )</td>
<td>-40 to +85</td>
<td>( ^\circ\text{C} )</td>
</tr>
<tr>
<td>DC Forward Current</td>
<td>( I_F )</td>
<td>30</td>
<td>mA</td>
</tr>
<tr>
<td>Peak Forward Current</td>
<td>( I_{FM} )</td>
<td>185</td>
<td>mA</td>
</tr>
<tr>
<td>Electrostatic Discharge Threshold (HBM)</td>
<td></td>
<td>3000</td>
<td>V</td>
</tr>
<tr>
<td>Thermal Resistance (Junction / Ambient)</td>
<td>( R_{\text{th JA}} )</td>
<td>585</td>
<td>( ^\circ\text{C}/\text{W} )</td>
</tr>
<tr>
<td>Thermal Resistance (Junction / Solder point)</td>
<td>( R_{\text{th JS}} )</td>
<td>495</td>
<td>( ^\circ\text{C}/\text{W} )</td>
</tr>
</tbody>
</table>

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. \( R_{\text{th JA}}, R_{\text{th JS}} \) Results from mounting on PC board FR4 (pad size \( \geq 16 \text{mm}^2 \) per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.
TECHNICAL DATA

RELATIVE INTENSITY vs. WAVELENGTH

![Graph of Relative Intensity vs. Wavelength]

SPATIAL DISTRIBUTION

![Graph of Spatial Distribution]

HYPER RED

Forward Current vs. Forward Voltage

![Graph of Forward Current vs. Forward Voltage]

Luminous Intensity vs. Forward Current

![Graph of Luminous Intensity vs. Forward Current]

Forward Current Derating Curve

![Graph of Forward Current Derating Curve]

Luminous Intensity vs. Ambient Temperature

![Graph of Luminous Intensity vs. Ambient Temperature]

REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

![Graph of Reflow Soldering Profile]

TAPE SPECIFICATIONS (units : mm)

![Graph of Tape Specifications]

REEL DIMENSION (units : mm)

![Graph of Reel Dimension]

Notes:
1. Don’t cause stress to the LEDs while it is exposed to high temperature.
2. The maximum number of reflow soldering passes is 2 times.
3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.
PACKING & LABEL SPECIFICATIONS

PRECAUTIONARY NOTES

1. The information included in this document reflects representative usage scenarios and is intended for technical reference only.
2. The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
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